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**A REVIEW OF THE RELATIONSHIP BETWEEN
TOBACCO USE AND MUSCULOSKELETAL INJURY**

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PURPOSE: To review the relationship between smoking and musculoskeletal injury and discuss hypotheses for the mechanism of tobacco's influence on the risk of physical injury.

BACKGROUND: The role of tobacco in the morbidity and mortality from cardiovascular disease, cancer, and other disorders is well documented. Smokers have been shown to have impaired healing of wounds and fractures, as well as chronic demineralization of bone resulting in susceptibility to fractures. Recent studies have shown higher musculoskeletal injury rates among smokers in the U.S. Army. Smoking has been shown to be a significant risk factor for occupational injuries among postal workers, and for back injuries among other workers.

DISCUSSION: The use of tobacco products is associated with a constellation of physiological and psychosocial factors which are capable of interacting to alter injury risk. These factors can be divided into two general categories: those that result in increased exposure to hazards and those that result in increased susceptibility to injury for any given hazard. Exposure to hazards is influenced by personality factors such as risk-taking behavior, and the propensity for the use or abuse of drugs and alcohol. Use of tobacco products may also reduce one's ability to appropriately recognize or react to hazards. Examples include decreased concentration ability resulting from nicotine withdrawal or decreased night vision resulting from elevated serum carbon monoxide levels. Physiological factors, acting at the tissue level, may be responsible for increased susceptibility to injury. Smokers may be at higher risk for "overuse injuries" due to a compromised ability to repair damaged tissues. For example, elevated carbon monoxide levels compromise tissue oxygen delivery. Also, nicotine causes vasoconstriction, inhibition of revascularization after injury, and may inhibit osteoblast activity. Smoking is also believed to lead to some vitamin deficiencies which may allow tissue damage by free radical formation or to impaired collagen synthesis.

CONCLUSIONS: Sufficient evidence exists to suggest that tobacco may have a primary and independent role in injury causation. The implications of this finding are profound. Uncovering the mechanism of this relationship may yield tools for preventing injuries among smokers or for making non-smokers less susceptible to injury.